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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/964,893 | 09/28/2001 | Claus Erdmann Furst | 45900-00064 | 1329 |

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HARNES, DICKEY & PIERCE, P.L.C.
P.O. BOX 8910
RESTON, VA 20195

EXAMINER

MICHALSKI, JUSTIN I

ART UNIT

PAPER NUMBER

2644

DATE MAILED: 01/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/964,893

Applicant(s)

FURST ET AL.

Examiner

Justin Michalski

Art Unit

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,5,7,17,18,35,36 and 38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection. The finality of the last rejection has been withdrawn.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1, 5, 7, 17, 18, 36, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin (US Patent 5,796,848) in view of Krokstad et al. (Hereinafter "Krokstad") (US Patent 5,276,739) in further view of Hershbarger et al. ("Hershbarger") (US Patent 5,654,984).

Regarding Claim 1 Martin discloses a microphone assembly of a hearing aid comprising a microphone assembly casing (6) having a sound inlet port (15), a transducer for receiving acoustic waves through the sound inlet port (1), and for converting received acoustic waves to analog signals (18), said transducer being positioned within the microphone assembly casing, an electronic circuit positioned within the microphone assembly casing, said electronic circuit comprising a signal path defined by a cascade of a pre amplifier (8) for amplifying analog audio signal from the

transducer, and a sigma-delta modulator for providing digital signals (7). Martin does not disclose the microphone assembly further comprises filter means in the signal path between the pre-amplifier and the sigma-delta modulator. Krokstad also discloses a microphone assembly for a hearing aid (Figure 5a) including a preamplifier (11a and b) and an analog to digital converter such as a sigma delta modulator (ADC). Krokstad discloses a filter means 13 between the pre-amplifier and analog to digital converter in order to deconvolve an input signal for a given frequency range. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a filter between the pre-amplifier and the sigma-delta modulator in order to deconvolve a specific frequency range of audio signal to be processed by the analog to digital converter as disclosed by Krokstad (Col 7, lines 49-52).

Martin/Krokstad does not disclose the filter means preventing low frequency components from reaching the sigma-delta modulator. Hershberger discloses a sigma-delta modulator and teaches that a band limiting low pass filter is placed before the modulator to prevent aliasing of the signal. (Col. 2, lines 59-62; Col. 13, lines 6-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a filter to remove low frequency components in order to prevent aliasing as taught by Hershberger.

Regarding Claim 5 Hershberger further discloses the filter is a high-pass filter (Col. 13, lines 6-10).

Regarding Claim 7, it is well known in the art that circuits can be formed on integrated circuits to create a smaller circuit.

Regarding Claim 17, Martin further discloses the microphone assembly 6 is connected to a signal processor, which inherently teaches as a digital signal processor as the signal was converted to a digital signal prior in the A/D converter 7.

Regarding Claim 18, Martin further discloses the unit as a digital hearing aid (abstract).

Regarding Claim 36, Martin further discloses filter 13 had an upper critical frequency of 8 kHz (Col. 7, lines 47-52) which inherently is a filter for passing a frequency band.

Regarding Claim 38, Martin further discloses the device is integrated on a monolithic integrated circuit (see Martin Claim 9).

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin Michalski whose telephone number is (703)305-5598. The examiner can normally be reached on 8 Hours, 5 day/week.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Isen can be reached on (703)305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JIM



HUYEN LE
PRIMARY EXAMINER